Structures for Wildlife – *Nest Structures Overview - 649*

Conservation Practice 649 – Overview of Nest Structures **April 2015.**

Figure 1. Barn Owl nest box

Figure 2. Wood Duck nest box

PRACTICE STANDARD DEFINITION

A structure installed to replace or modify a missing or deficient wildlife habitat component.

PURPOSE

To improve overall habitat conditions for wildlife species. This practice may be applied as part of a wildlife habitat management plan to serve one or more of the following functions:

- Provide structure for loafing, escape, nesting, rearing, roosting, perching, or basking.
- Provide an escape, avoidance, or exclusionary feature from otherwise life-threatening conditions.
- Provide alternative cover when natural cover is not readily available.
- Improve or restore habitat connectivity.

WHERE USED

Wildlife structures are placed in all land types or land use areas where placement of these structures will address wildlife limiting factors.

RESOURCE MANAGEMENT SYSTEM

Fish and wildlife structures are normally established as facilitating practices concurrently with other practices as part of a resource management system for a conservation management unit. Where a change in management alone will not address the wildlife concern, facilitating practices act as a catalyst to addressing the resource concerns. For example where historic and/or current management practices have eliminated adequate shelter and cover for target wildlife, implementing additional practices can provide substitute cover and shelter until the plant community responds to that changed management. Installing nest structures can provide needed nesting and roosting sites for secondary cavity nesting species or other wildlife.

WILDLIFE BENEFITS

DEVELOPMENT AND MANAGEMENT OF COMPLEX NEST STRUCTURES

Artificial nest structures can be used to increase wildlife reproductive success in areas where natural nest sites are unavailable or unsuitable. Suitable nesting habitat for secondary cavity nesting birds is often unavailable due to current and past land management practices. Loss of large trees and snags with natural cavities contributed to the historic declines of wood ducks, other waterfowl species, owls and numerous species of song birds in woodlands, forests and the riparian areas that bisect these wooded areas. Many of these birds will use artificial nest structures placed in these woodlands, forests, riparian areas and even croplands. Other non-target birds and mammals will use these structures for roosting and winter cover.

The most effective artificial nesting structures are those installed in close proximity to brood-rearing habitat, adequate escape/concealment cover, a reliable source of food and water, and other elements of the habitat of target species. Predators, competitors, and territory sizes for individual species also influence the usefulness of nesting structures. Nest monitoring and maintenance actions can be taken to limit competing or undesirable species, assess reproductive success, and provide an opportunity for landowners and managers to observe wildlife.

NRCS should use of the Wildlife Habitat Evaluation Guide to indicate if there is a shortage of suitable nesting sites. Other habitat features in the area will inform the planner as to the likelihood of nest success for the target wildlife species.

Nesting Structure Elements Requirements
Nesting structure elements that affect the success of the artificial nest structure include construction materials, design, placement, installation methods, use of predator guards, monitoring and maintenance. Consider the considerations for these elements.

- *Construction materials*- Construction materials should be made of wood. Structures made of wood are relatively inexpensive and easy to build. Wood seems to be the most weather-resistant, insulating material, and most wildlife species prefer wood to metal or plastic structures.
- *Nest structure design* - the size of the entrance hole also influences the internal temperature of the box, predator accessibility, and use by competing nontarget species.
- *Placement* – Habitat requirements of target wildlife species and available habitat greatly influences nesting structure placement. Some species seek secluded nesting sites, while others prefer to nest in more open areas. Species-specific nesting preferences should be considered when deciding where to install nesting structures. Structures should be made available and ready for occupants before the breeding season begins.
- *Installation* - When installing nest structures, landowners should consider height above the ground, orientation, predator guards, and preferred natural nesting sites. Woodpeckers and bats prefer nest boxes that face east, providing greater morning sun exposure. Most birds and mammals favor entrances that face away from prevailing winds. Nest structures can be attached to poles, posts, or pipes on land or in the water. Nest boxes can also be attached to trees; however, it is hard to install predator guards on tree trunks.
- *Predator Guards* - Predators (both native and introduced) can limit the reproductive success of wildlife using natural nest sites and artificial nesting structures. The rough surface of wooden posts and trees makes climbing easy for terrestrial predators such as snakes, raccoons, and domestic cats.

- *Monitoring and Maintenance* - Nesting structures can be monitored throughout the nesting season to track use and nest success, remove undesirable exotic species, and to clean the structure after young are fledged to make it available for late and second nesting attempts. Some birds and mammals tolerate limited levels of human disturbance, such as occasional (once a week or once every ten days) nest checks, but others do not. **Nest checks should be completed quickly to minimize stress on parent birds and young.** Intrusive monitoring of sensitive species (e.g., ferruginous hawks, ospreys, and barn owls) should be limited to prevent nest abandonment. Well-built nesting structures can last 10-15 years if properly maintained. After a brood has left the structure, the old nesting material should be cleaned out to make room for a second clutch. **Nest structures should be checked at least once per year before the breeding season starts** to remove old nesting materials, mouse nests, insects, and other debris. Place fresh wood chips, shavings, or sawdust in nest boxes, if appropriate. Replacement parts and other repairs can be made to nest structures during annual maintenance checks.
- *Competitors* - Competition for nest sites is often high among cavity-nesting wildlife species. Birds, small mammals, and insects compete for suitable sites. Deer mice and squirrels often inhabit nest structures during the winter months, and their nests should be removed during annual maintenance inspections if they are not the target species. Wasps and bees also build nests in bird houses. These insects can be discouraged by soaping the inside top of nest boxes. If insects such as paper wasps establish a nest in a vacant box, a low toxicity insecticide can be sprayed inside the box in the early morning (when the insects are still cold and sluggish) and the nest can be removed. Annual maintenance and monitoring help detect colonies of wasps and bees.

Basic Nest Box Characteristic Requirements:

- Should be made of wood; cedar (preferred, most weather-resistant), cypress, redwood, or pine.
- Box should open from the side or top for maintenance and cleaning.
- Sides of nest box should enclose the floorboard (recessed 1/4 inch) to prevent rain seepage
- Nails, woodscrews, and hinges should be rust-proof.
- Entrance hole dimensions should accommodate the desired bird species; hole should not large enough to allow competitors and predators access.
- A double thick entrance and extended roof to deter predators like squirrels and raccoons.
- Ventilation holes or slits at the top of both sides, just beneath the roof of the box.
- Drainage holes (four or five) drilled into the bottom of the nest box to allow for drainage.
- Songbird nest box should not have a perch, which increase predator access; native songbirds do not use perches.
- Nest box should not be treated with green-preservative— it is poisonous to birds.
- Nest box should not be painted on the inside or painted bright, unnatural colors on the outside (may attract predators or exotic species).

REFERENCES

USDA-NRCS 2004. Artificial Nesting Structures, Fish and Wildlife Habitat Mgmt Leaflets No 20, pp 31.

Barn Owls

This Job sheet contains selected text, drawings and design from Build A Barn Owl Box with permission from the authors Charles G. Wade, Lee Pauser, design by Steve Simmons and sketches by David Altknecht, IBM, which was produced with support by IBM. Build a Barn Owl Box can be found at the Santa Clara Valley Audubon Society webpage http://www.scvas.org/index.php?page=text&id=cbrp_barnowl

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Wood Ducks

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